

Efficacy and Hazards of Selective Weedkillers

OF ALL THE ways in which the scientist has helped the farmer to achieve greater productivity, none has been more successful than the development of modern methods of chemical weed control.

The chief problem—and greatest success—has been in finding selective herbicides that kill the weeds but leave the crop unharmed. There are now weedkillers that selectively destroy weed

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grasses growing in cereals, both of which are in the same botanical order, Gramineae, and therefore have a similar growing habit.

As with most new farming techniques herbicides have created their own problems. Their consistent use over the years has led to changes in the weed population, species that are resistant to the chemical used becoming dominant. Specific weed problems have also been caused by the longer growing season of cereals and their more frequent use in the rotation.

Fortunately, progress has been so rapid that the farmer is able to counter-attack with mixtures of chemicals that control a wider range of weeds, and herbicides designed to kill one or two specific weeds that have become particularly dominant.

Usually the timing of the application of weedkillers is critical. In the control of wild oats in cereals, for example, Carbyne must be sprayed when the weed has one to two-and-a-half leaves. Last autumn up to 100 per cent control was

able. This chemical kills a wide range of plants and has the advantage, unlike most total weedkillers, of quickly breaking down so that another crop can be sown soon after application. The usual procedure with old pasture treated in this way is to rotavate the dead herbage, apply fertilizer and reseed, or to reseed the vegetative mat direct using a sod-seeder, which is similar to a combine drill.

Generally speaking, fruit growers have been slower than arable farmers to adopt chemical weed control. Since fruit crops are mostly perennial and represent a fairly high capital investment the risk of damage from herbicides is greater than in arable crops. But now that experience is being gained and the operation made safer this objection is no longer so strong.

There are some row crops, such as sugar beet and potatoes, that still have to be cultivated to destroy weeds, but residual herbicides are being developed, in the same group as Simazine, that could well eliminate much of the machine and hand hoeing done at present. One can safely predict that soon there will



The oats in the foreground were sprayed with Bexone 35 days before being photographed. Those in the background were unsprayed.

achieved with the chemical under commercial conditions, and results were satisfactory on 99 per cent of the nearly 80,000 acres of cereals sprayed.

The same chemical is now being used to control blackgrass in autumn-sown cereals where the weed has become dominant, especially on heavier land, because the traditional method of control has become impracticable and uneconomic. The weed is able to grow in the autumn and so seriously compete with the crop.

Field trials have shown that 70 to 80 per cent control can be achieved by spraying up to the middle of January after the blackgrass has developed two leaves. Increases of up to 50 per cent have been recorded where most of the weed has been killed.

One of the most important advances in chemical weed control has been the introduction of Simazine and allied compounds. Simazine has proved especially valuable as a pre-emergence herbicide in soft fruit and in maize. A similar chemical, Semeron, recently announced, is claimed to control weeds in kale when applied as a post-emergence spray when the crop has reached the three leaf stage.

These herbicides have been devised to reduce weed competition in a growing crop, but this autumn a chemical was introduced for a different purpose—the destruction of all vegetation to which it is applied. Gramoxone, based on paraquat, was designed to improve grassland that is inaccessible to the plough or where ploughing is inadvis-

able. This chemical kills a wide range of plants and has the advantage, unlike most total weedkillers, of quickly breaking down so that another crop can be sown soon after application. The usual procedure with old pasture treated in this way is to rotavate the dead herbage, apply fertilizer and reseed, or to reseed the vegetative mat direct using a sod-seeder, which is similar to a combine drill.

The use of the new chemicals has, however, brought a new hazard into farming—spray drift. Especially in areas where arable and market garden crops can be found on the same farms, there has been a reluctance to adopt some of the total weedkillers because of the danger of damage to crops through drift. Paraquat, for instance, cannot distinguish a crop from a weed and will destroy any green matter on contact. That is why all farmers will be watching with interest the progress of the recently introduced vibro-boom spraying mechanism which, it is claimed, completely eliminates drift. (Picture on page 2.)

Working on the principle of a reciprocating boom, the new type of spray bar does away with the ordinary spray nozzles. Holes drilled in the boom send out droplets too large to be carried on the wind. The reciprocating action breaks up the stream of spray from each nozzle finely enough to give an adequate coverage of the ground. Already the principle has been applied to machines working in blackcurrants, hops, strawberries, onions and bulbs.

One of the features of the demonstration area at the new showground of the Royal Agricultural Society at Stoneleigh next July is likely to be weed control without the plough. It will be a tribute to the scientists who are helping the farmers to go on increasing productivity in spite of a steadily declining labour force.

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